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**Defining the localization and molecular characteristic of minor salivary gland label retaining cells.**

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**Public Summary:**

Our data highlight for the first time the existence of minor salivary gland label retaining cells with stem cells characteristic and emphasize the role of transforming growth factor beta (TGFβ) pathway in their maintenance.

**Scientific Abstract:**

Adult stem cells (SCs) are important to maintain homeostasis of tissues including several mini-organs like hair follicles and sweat glands. However, the existence of stem cells in minor salivary glands (SGs) is largely unexplored. In vivo histone2B GFP (H2BGFP) pulse chase strategy has allowed us to identify slow cycling, label retaining cells (LRC) of minor salivary glands that preferentially localize in the basal layer of the lower excretory duct with a few in the acini. Engraftment of isolated SG LRC in vivo demonstrated their potential to differentiate into keratin 5 (basal layer marker) and keratin 8 (luminal layer marker) positive structures. Transcriptional analysis revealed activation of TGFbeta1 target genes in SG LRC and BMP signaling in SG progenitors. We also provide evidence that minor SGSCs are sensitive to tobacco derived tumor inducing agent and give rise to tumors resembling low grade adenoma. Our data highlight for the first time the existence of minor salivary gland LRCs with stem cells characteristic and emphasize the role of TGFbeta pathway in their maintenance. Stem Cells 2014.

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